

What is claimed is:

- 1 1. A modular backplane for an industrial computer comprising:
2 a first modular backplane segment having a first front side and a first back side,
3 the first front side including a plurality of slots and the first back side including a first
4 dedicated connector;
5 a second modular backplane segment having a second front side and a second
6 back side, the second front side including a plurality of slots and the second back side
7 including a second dedicated connector; and
8 a bridge module having two connectors, one of which is engaged with the first
9 dedicated connector and the other is engaged with the second dedicated connector,
10 thereby communicatively connecting the first and second modular backplane segments.
1 2. A modular backplane for an industrial computer according to claim 1,
2 wherein the bridge module further comprises a circuit board and a bridging integrated
3 circuit.
1 3. A modular backplane for an industrial computer according to claim 1,
2 wherein the height of the bridge module is less than that of the slot.
1 4. A modular backplane for an industrial computer according to claim 3,
2 wherein the height of the bridge module is less than 16 mm.

1 5. A modular backplane for an industrial computer according to claim 1,
2 wherein the width of the bridge module is less than 12HP.

1 6. A modular backplane for an industrial computer according to claim 1,
2 wherein the length of the bridge module is less than 94 mm.

1 7. A modular backplane for an industrial computer according to claim 1,
2 wherein the first and second dedicated connectors are provided in an area where no slot
3 is formed.

1 8. A modular backplane for an industrial computer according to claim 7,
2 wherein the first dedicated connector is disposed in an area between a right-most pair of
3 slots in the front side of the first backplane segment, and the second dedicated connector
4 is disposed in an area between a left-most pair of slots in the front side of the second
5 backplane segment, and vice versa.

1 9. A modular backplane for an industrial computer according to claim 1,
2 wherein the first back side and the second back side each further include a plurality of
3 slots.

1 10. A modular backplane for an industrial computer according to claim 9,
2 wherein the slots include J3, J4 and J5 connectors.

1 11. A modular backplane for an industrial computer according to claim 9,
2 wherein the slots may provide for the insertion of add-in cards.

1 12. A modular backplane for an industrial computer according to claim 1,
2 wherein the slots include J1, J2, J3, J4 and J5 connectors.

1 13. A module backplane for an industrial computer according to claim 1, wherein
2 the slots in the first front side provide for the insertion of a system slot board and a
3 plurality of peripheral boards and all of the slots in the second front side for the insertion
4 of a plurality of peripheral boards, and vice versa.

1 14. A modular backplane for an industrial computer according to claim 1,
2 wherein the first front side and the second front side each include seven slots.

1 15. A modular backplane for an industrial computer comprising:

2 a plurality of modular backplane segments, each modular backplane segment
3 including a front side and a back side, in which the front side has a plurality of slots and
4 the back side has a primary dedicated connector and a secondary dedicated connector;
5 and

6 a plurality of bridge modules for connecting the modular backplane segments,
7 each bridge module having a pair of connectors, one of which is engaged with the primary
8 dedicated connector in one of the backplane segments while the other connector is engaged
9 with the secondary dedicated connector in its neighboring segments, and vice versa, such
10 that all the modular backplane segments are communicatively connected with another.

1 16. A modular backplane for an industrial computer according to claim 15,
2 wherein the bridge module further comprises a circuit board and a bridging integrated
3 circuit.

1 17. A modular backplane for an industrial computer according to claim 15,
2 wherein the height of the bridge module is less than that of the slot.

1 18. A modular backplane for an industrial computer according to claim 17,
2 wherein the height of the bridge module is less than 16 mm.

1 19. A modular backplane for an industrial computer according to claim 15,
2 wherein the width of the bridge module is less than 12HP.

1 20. A modular backplane for an industrial computer according to claim 15,
2 wherein the length of the bridge module is less than 94 mm.

1 21. A modular backplane for an industrial computer according to claim 15,
2 wherein the dedicated connectors are provided in an area where no slot is formed.

1 22. A modular backplane for an industrial computer according to claim 21,
2 wherein the primary and secondary dedicated connectors are provided in areas between
3 a left-most slots and a right-most pair of slots, respectively, in the front side of the
4 backplane segment, and vice versa.

1 23. A modular backplane for an industrial computer according to claim 15,
2 wherein the back side further includes a plurality of slots.

1 24. A modular backplane for an industrial computer according to claim 23,
2 wherein the slots include J3, J4 and J5 connectors.

1 25. A modular backplane for an industrial computer according to claim 23,
2 wherein the slots may provide for insertion of add-in cards.

1 26. A modular backplane for an industrial computer according to claim 15,
2 wherein the slots include J1, J2, J3, J4 and J5 connectors.

1 27. A module backplane for an industrial computer according to claim 15,
2 wherein the slots in the front side of one of the backplane segments provide for the
3 insertion of a system slot board and a plurality of peripheral boards and all of the slots
4 in the front side of the remaining backplane segments for the insertion of a plurality of
5 peripheral boards.

1 28. A modular backplane for an industrial computer according to claim 15,
2 wherein the front side includes seven slots.

1 29. A monolithic backplane for an industrial computer comprising:

2 a first modular backplane segment having a first front side and a first back side,
3 the first front side including a plurality of slots and the first back side including a first
4 dedicated connector;

5 a second modular backplane segment having a second front side and a second
6 back side, the second front side including a plurality of slots and the second back side
7 including a second dedicated connector; and

8 a bridge module having two connectors, one of which is engaged with the first
9 dedicated connector and the other is engaged with the second dedicated connector,
10 thereby communicatively connecting the first and second modular backplane segments